KPDES FORM HQAA

Kentucky Pollutant Discharge Elimination System (KPDES)

High Quality Water Alternative Analysis

The Antidegradation Implementation Procedures outlined in 401 KAR 5:030, Section 1(3)(b)5 allows an applicant who does not accept the effluent limitations required by subparagraphs 2 and 3 of 5:030, Section 1(2)(b) to demonstrate to the satisfaction of the Environmental and Public Protection Cabinet that no technologically or economically feasible alternatives exist and that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the water is located. The approval of a POTW's regional facility plan pursuant to 401 KAR 5:006 shall demonstrate compliance with the alternatives analysis and socioeconomic demonstration for a regional facility. This demonstration shall also include this completed form and copies of any engineering reports, economic feasibility studies, or other supporting documentation

I. Permit Information

Facility Name:	Locust Grove, Inc.	**KPDES NO.:**	Pending
Address:	PO Box 958	**County:**	Perry
City, State, Zip Code:	Hazard, KY 41702	**Receiving Water Name:**	Brown's Fork & Messer's Branch

II. Alternatives Analysis - For each alternative below, discuss what options were considered and state why these options were not considered feasible.

Discharge to other treatment facilities. Indicate which treatment works have been considered and provide the reasons why discharge to these works is not feasible.

A wastewater treatment facility operated by the City of Hazard is located approximately 9 miles North of the proposed discharge sites. In order to transfer the discharges a pipeline system would be needed. The estimated costs associated with the pipeline construction would be approximately $2.00/linear foot for an eight inch diameter PVC pipe; approximately $60.00/hour for labor (4 man crew @ $15.00/hr. each); approximately $10,000 per pumping station (discharge must travel uphill); $500,000 for obtaining property rights; treatment facility costs of approximately $10/day for the life of the mine (estimated life of 10 years). Thus, the total costs would be calculated as follows: pipe cost = $2.00 x 47,520 ft. = $95,040 + labor costs = $60.00 X 600 hours = $36,000 + 3 pumping station = $30,000 + property rights = $500,000 + treatment costs = $10 X 3,650 days = $36,500; for a total cost of $697,540. This alternative would result in additional environmental impacts resulting from construction of a pipeline.

A possible alternative to piping water to the treatment facility would be the use of trucks to transport water. This alternative would pose additional costs in the construction of a system of pipes and collection tanks to collect and hold the water prior to loading tank trunks. There would also be transportation costs of approximately $0.70 per mile. If the total amount of water collected per month were 9,387,767 gallons (based on proposed pond volumes), it would need 4694 round trips per month using a 2000-gallon truck. Thus, 4694 trips at a distance of 18 miles at $0.70/mile generates a cost of $59,144/per month, $7,097,328 total over the life of the project. This alternative would also result in additional impacts to the environment in the form of a loss of about 9.3 million gallons of water per month to the local watershed. This may constitute material damage to the hydrologic balance within and outside of the permit area (405 KAR 18:060, Section 1). In addition, implementing this alternative would result in increased risks to public safety because it would necessitate repeated daily trips by large water tankers on the small rural local roads.

2. **Use of other discharge locations.** Indicate what other discharge locations have been evaluated and the reasons why these locations are not feasible.

The applicant has evaluated the possibility of directing the proposed discharge to an adjacent stream channel in order to avoid discharges to Browns Fork and Messer's Branch (high quality stream channels). The nearest adjacent stream channel to be evaluated is Buffalo Creek (high quality stream channel), located east of the proposed discharges. In order to transfer the proposed discharge to Buffalo Creek, the discharge would have to be pumped and carried through pipeline that traversed the surrounding hilly topography. The constructed pipeline would need to be approximately 1.2 miles in length with a minimum of 3 pumping stations in order to be re-directed to Buffalo Creek. The cost associated with the transfer of the discharge to the adjacent stream channel would involve the purchase of a 3 pumping stations (approximately $30,000), piping (approximately $2.00 X 6336 feet = $12,672), labor costs (approximately $15.00/hr/laborer at 4 laborers for 240 hours = $14,400), property rights acquisitions of approximately $100,000, and equipment for clearing of the pipeline route (approximately $68,000) for a total cost of $225,072. Furthermore, the environmental impact to the adjacent Buffalo Creek would be virtually the same as to the proposed stream channels, with additional surface disturbances necessary for the construction and site preparation.

II. Alternatives Analysis - continued

3. **Water reuse or recycle.** Provide information about opportunities for water reuse or recycle at this facility. If water reuse or recycle is not a feasible alternative at this facility, please indicate the reasons why.

The applicant is proposing eighteen(18) discharge locations (sedimentation ponds) that will discharge into Browns Fork and Messers Branch. The proposed discharge points will control runoff from approximately 300.5 surface disturbance acres via sedimentation ponds and assuming the ponds are all constructed at the same time and assuming that the ponds maintain a full volume of water, the total volume of water available for recycling uses each month would be approximately 9,387,767 gallons (based on proposed pond capacities). Approximately 20,000 gallons of stored water each month (during the months of June, July, and August each year) could be reused as a dust suppressant for road facilities. Re-distribution of the water to the surrounding surface areas would be difficult, as the surrounding slopes average 27° and runoff would create additional potential environmental damage. An additional on-site reuse of waters to be evaluated is that of utilizing the water during reclamation operations. While some water may be utilized within hydroseeders during reclamation, the total amount (approximately 2,000 – 3,000 gallons) utilized would not eliminate the discharges generated during the mining operation. The total amount to be reused onsite would about 23,000 gallons during those months of highest water use. This would leave an excess of at least 9.3 million gallons per month.

In order to recycle the additional amount of generated wastewater to potable drinking water, the discharge would have to be transferred to the City of Hazard drinking water treatment facility located approximately 9 miles North of the proposed discharge location within the city of Hazard. Thus, the cost associated with the transfer of the discharges to the treatment facility would be as follows: $2.00/linear foot for an eight inch diameter PVC pipe; approximately $60.00/hour for labor(4 man crew @ $15.00/hr. each); approximately $10,000 per pumping station (discharge must travel uphill); $500,000 for obtaining property rights; treatment facility costs of approximately $10/day for the life of the mine (estimated life of 10 years). Thus, the total costs would be calculated as follows: pipe cost = $2.00 X 6336 feet = $12,672+ labor costs = $60.00 X 600 hours = $36,000 + 3 pumping station = $30,000 + property rights = $500,000 + treatment costs = $10 X 3,650 days = $36,500; for a total cost of $615,172.

4. **Alternative process or treatment options.** Indicate what process or treatment options have been evaluated and provide the reasons they were not considered feasible.

The applicant is proposing a coal removal operation and will remove the coal reserves by Surface mining methods. An alternative to this removal method would be that of underground mining. Coal removal by underground mining methods of the proposed reserves is impractical, as the coal beds within the reserve area can not be economically mined via the underground mining method due to the nature of the reserves. The geology within the reserve area will not allow multiple seam underground mining operations as the seems are to close to each other in elevation, contain to much parting, and/or the reserve area is to small.

An on-site wastewater treatment facility would be difficult. The cost of the treatment facility alone ($50,000 - $100,000) would make this alternative difficult. Other costs associated with a treatment facility would include employee salaries of $40,000/year/employee, chemical costs of $50,000/ year or more, miscellaneous equipment purchase costs of $50,000 per year, maintenance costs of $10,000/year. Upon completion of mining operations the removal of the wastewater treatment facility would cost $5,000 - $8,000. A waste water treatment facility designed to treat mine run-off would primarily use a series of water holding tanks and chemicals such as flocculents to reduce sediment and dissolved mineral loads in the water. As such, it would be performing the same treatment methods as with the use of ponds, but at a higher cost.

II. Alternatives Analysis - continued

5. **On-site or subsurface disposal options.** Discuss the potential for on-site or subsurface disposal. If these options are not feasible, then please indicate the reasons why.

The potential for on-site disposal of wastewater was investigated. The construction of injection wells on-site was investigated as an alternative to the proposed discharges. The injection wells would be approximately 8" in diameter and approximately 300' in depth and would hold a volume of water of approximately 785 gallons per well. Thus, approximately 11,959 wells would be needed to ensure no discharge will occur. The estimated costs associated with the wells would be approximately $20/linear foot, thus, 11,959 wells at 300' in depth would cost approximately $71,754,000.

Additionally, the construction of a subsurface septic tank and leachate bed was evaluated. The cost of the septic tank and leachate bed system would be approximately $10,000 for each system. At least one (1) septic tank and leachate bed system would be required for each sedimentation pond, thus, at least eighteen (18) would be required that would result in a total minimum cost of $180,000. In addition to the increased water discharge cost, the topography associated with the proposed discharge areas would make the construction of on-site septic systems difficult. Furthermore, additional surface disturbances would be necessary during maintenance and removal of the septic system(s). Septic systems would not adequately treat sedimentation, as they are designed as biological treatment facilities.

Spray irrigation was evaluated as an on-site disposal method. However, the slopes within the proposed and adjacent areas are greater than 6% and runoff would not be contained.

Abandoned underground mine works within the Hazard #7 coal bed are present within the proposed area and were evaluated as a possible site for disposal of runoff from the disturbed areas. The abandoned underground works will be mined-through in various permitted areas, thus, any water stored within the abandoned underground areas would discharge at various locations and create sediment laden runoffs. Furthermore, if the abandoned underground works did sustain and store the discharges, a risk of 'blow-out' would exist that could potentially create grave environmental and public safety issues by being suddenly released in an uncontrolled manner.

6. **Evaluation of any other alternatives to lowering water quality.** Describe any other alternatives that were evaluated and provide the reasons why these alternatives were not feasible.

Another alternative investigated for the proposed discharges involve avoiding the proposed mining operation. To avoid the proposed mining operation would result in the coal reserves remaining in-place and would not accomplish project goals.

With the coal reserves remaining in-place and the proposed surface mining operation not being conducted, approximately 20 directly related jobs would be lost. The loss of the jobs would result in a reduction of the local tax base should the potential laborers be forced to travel outside the area for employment. Miners in Kentucky made an average weekly salary of $972.00 in 2004 (KY Coal Facts). Thus, this would mean a loss of approximately $1,010,880 (20 employees with annual salaries of $50,544) annually in local taxable income. Additionally, without the in-place coal being mined, the total loss in coal severance tax would be approximately $1,334,616 (based on a minimum of $0.50/ton with approximately 2,669,232 tons of recoverable reserve).

Additionally, the applicant may elect to accept more stringent limitations for the discharges in order to waive the HQAA requirements. The more stringent limitations would potentially create a long-term retention of the discharge points. The costs associated with on-going treatment of the discharge points would vary based upon the flow of the discharge in combination with the concentration of the contaminant. Estimating, based upon present cost of treatment facilities of approximately $200/month for each structure, the resulting annual discharge maintenance cost is approximately $36000/year ($200 x 15 x12). Consideration was also given to the temporary nature of the discharge points. Once the post-mining reclamation has been completed, the discharge will be eliminated and natural hydrologic function will be restored.

A limestone facility was evaluated for treatment of discharged water not within acceptable ranges. In order to construct a limestone facility, additional disturbances would be necessary downstream from the proposed discharge point(s). Thus, creating additional sedimentation loads to the local stream channels. Furthermore, the limestone facility may not accurately treat the discharged contaminate. The limestone facility may become clogged with material over time and release an unnecessary amount of sedimentation to the local stream channels.

III. Socioeconomic Demonstration

1. State the positive and beneficial effects of this facility on the existing environment or a public health problem.

The proposed surface mining operation will be performed in accordance with all state and federal regulations governing the coal mining industry to ensure environmental and public health. The proposed area has been previously logged and natural gas well and lines have been constructed. The previous disturbances were performed without sediment control in-place, thus, excessive sediment was allowed to enter the receiving stream channels. The proposed mining operation will provide sediment control via sediment control ponds that will be located downstream from the proposed disturbance areas and downstream from a majority of the previous disturbance areas. The proposed sediment control ponds will capture sediment runoff from the proposed surface disturbance areas as well as from the previously disturbed areas. The sediment control structure will allow the receiving streams to recover from previous sedimentation and prior to removal of said sediment control ponds all disturbed areas, previous and proposed, will be revegetated. This will create a better habitat for aquatic organisms within the receiving stream channel.

2. Describe this facility's effect on the employment of the area.

The cumulative economic impact of the proposed project will be to contribute to the overall present economy in Perry County. Not only will the proposed project directly contribute to the mining industry, but will contribute to other sectors closely related to the mining industry. These sectors will include trucking companies, mine supply companies, equipment sales companies, fuel sales companies, engineering firms, and other sectors that depend upon the mining industry as a part of their accounts receivable base. Perry County heavily relies on the coal industry as a part of its viable economy, as do most counties in the region. In Perry County mining accounted for 14% of all employment in FY 2004 and accounted for 21.4% of total county wages (KY Coal Facts). As old mining operations close, new operations must be opened in order for the local economy to sustain its current level. History has shown that a 'slow down' in the coal industry directly impacts differing business sectors within the region.

While mining, retail, and services employed the greatest percentages of workers in Perry County in 2004, the mining, public administration, and information sectors provided the highest average weekly wage (U.S. Department of Labor, Bureau of Labor Statistics). The mining industry paid an average weekly wage of $1,026.07. It is estimated that the proposed surface mining operation will pay out an annual payroll of approximately $1,067,113 to approximately 20 employees. Additionally, the proposed mining project would support employment for sectors that provide a service to the mining industry, i.e. material sells equipment sells/rentals, etc. The money paid out would be circulated throughout the community and help create a local healthful economy. The total number of American jobs created both directly and indirectly by the domestic mining industry was more than 3 times the number of workers directly involved in mining (KY Coal Facts). Thus, approximately 60 people would be indirectly impacted by the proposed surface mining operation.

3. Describe how this facility will increase or avoid the decrease of area employment.

The proposed surface mining operation will include new facilities that will possibly create employment for persons currently unemployed or for persons currently working at other mining facilities that are nearing completion, and perhaps will become unemployed if new job opportunities are not presented. The jobs created by the proposed operation will be permanent during the life of the operation. Additionally, the proposed operation may possibly create jobs indirectly related to the operation as additional mining operations create demands for operational supplies. Thus, the 20 employees needed to conduct the proposed mining operation will be able to continue working within the mining industry.

The 2008 population records showed that Perry County had a total population of 29,241, which is a population decrease of 0.6% since the 2000 census records. The decrease in population may result from relocations due to unavailable employment. Thirty-one percent of Perry County residents lived below the poverty range in 2007 and the unemployment rate was 7.2%. The average annual household income for residents residing in Perry County in FY 2007 was $30,089.

The proposed mining operation will aid in raising the average annual household income and will help increase job opportunities in the region.

4. Describe the industrial or commercial benefits to the community, including the creation of jobs, the raising of additional revenues, the creation of new or additional tax bases.

The mining industry contributes to the local tax base through taxes on real and personal property, which in turn funds public services. During active stages of a mining operation, the property is assessed at a higher value when real property taxes are determined. Prior to mining activities or post mining activities, the idle property has a much lower value and property taxes paid do not contribute as much to the local economy. Personal property taxes are levied on the equipment utilized during a mining operation. A surface mining operation requires the purchase and use of numerous, very expensive, pieces of equipment during the life of the operation. The purchase of mining equipment drives the industry's sizable contribution to the personal property tax base because new equipment is expensive and depreciates rapidly. Property tax payments will be received from Locust Grove, Inc during the life of the project, otherwise if not permitted, property tax payments received by Perry County would be a lesser amount. The state severance tax is a gross receipt tax levied on businesses that sever, extract, and/or produce natural resource products, including coal, in Kentucky. The goal of the severance tax is to provide producing counties with funds to develop alternative industries to sustain the communities in the future once this natural resource is exhausted. The proposed operation would generate approximately $1,334,616 (based on a minimum of $0.50/ton with approximately 2,669,232 tons of recoverable reserve) in severance tax during the life span of the operation. Although a majority of the tax revenue is directed to the state, a large portion will directly benefit Perry County. During FY 2005 coal severance taxes returned to Perry County totaled approximately 50% of taxes paid-in. (KY Coal Facts).

5. Describe any other economic or social benefits to the community.

Due to the economic impact of the coal industry throughout Kentucky in 2004, in addition to 15,012 persons working at the mines, 6,021 persons worked in factories making everything from mining equipment to home appliances; 2,617 persons drove coal trucks and cargo trucks, worked at rail yards, etc.; 12,704 persons worked in warehouses, sold clothing, appliances, furniture, in retail stores, etc.; 12,470 persons worked in banks, law offices, engineering firms, accounting firms, and other service businesses; 4,366 persons built homes, offices, factories, and highways; and 7,968 others were teachers, government officials, and a wide variety of other professions and occupations. (KY Coal Facts)

The mining industry accounted for 1,528 jobs directly related to mining in 2004 in Perry County and made up 14% of the total labor force. Wages paid out to miners in Perry County in 2004 totaled $81,527,395, comprising 21.4% of the county's total wages with an average weekly salary of $1,026.07.

III. Socioeconomic Demonstration - continued

	Yes	No
6. Will this project be likely to change median household income in the county?	☒	☐
7. Will this project likely change the market value of taxable property in the county?	☒	☐
8. Will this project increase or decrease revenues in the county?	☒	☐
9. Will any public buildings be affected by this system?	☐	☒

10. How many households will be *economically* or *socially* impacted by this project? **20 directly and approximately 60 indirectly for a total of approximately 80.**

11. How will those households be *economically* or *socially* impacted? (For example, through creation of jobs, educational opportunities, or other social or economic benefits.)

The 20 to 60 households that would be positively impacted by the creation of job opportunities or through the continuation of gainful employment. The salaries for the 20 directly employed persons would average $53,356 annually and the salaries of those indirectly employed would vary based on the services/merchandise provided. The employment opportunities would aid those impacted with higher education opportunities, better health care, and the provision of everyday basic needs (ie. food and shelter).

	Yes	No
12. Does this project replace any other methods of sewage treatment to existing facilities? (If so describe how)	☐	☒

The proposed mining operation is not related to sewage treatment. The treatment facilities proposed (sedimentation ponds) are designed to control/eliminate excessive sedimentation from entering the local stream channels as a result of surface disturbances to be located upstream from the treatment facility sites.

	Yes	No
13. Does this project treat any existing sources of pollution more effectively? (If so describe how.)	☒	☐

The proposed mining operation will provide sediment control structures that will effectively treat sediment runoff from the proposed mining areas as well as the previous surface disturbances created by previous logging activities and natural gas utility construction activities. The sediment control structures will prevent excessive sedimentation of the local receiving stream channel.

III. Socioeconomic Demonstration - continued

	Yes	No
14. Does this project eliminate any other sources of discharge or pollutants? (If so describe how.)	☒	☐

The proposed mining operation will eliminate existing potential sediment runoff resulting from surface disturbances within the proposed area created by human activities, such as disturbances created by off-road and ATV vehicles, by revegetating the disturbed areas. The revegetation of disturbed areas would eliminate a source of pollutants through erosion.

15. How will the increase in production levels positively affect the socioeconomic condition of the area?

See Attachment 15

16. How will the increase in operational efficiency positively affect the socioeconomic condition of the area?

See Attachment 16

IV Certification: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and Title:	Mike Ivey, Vice-President	**Telephone No.:**	(606) 439-5151
Signature:	Michael Ivey	**Date:**	8/20/09

RESOLUTION OF BOARD OF DIRECTORS OF
LOCUST GROVE, INC.

RESOLVED, that Michael Ivey, Vice President of this Corporation be and he hereby is authorized and empowered to sign documents before the Commonwealth of Kentucky, in the name and in behalf of this Corporation.

I, Michael Herald, do hereby certify that I am the duly elected and qualified Secretary and the keeper of records of Locust Grove, Inc., a corporation organized and existing under the laws of the State of Kentucky, and that the above is a true and correct copy of a resolution duly adopted at a meeting of the Board of Directors thereof, convened and held in accordance with law and the Bylaws of said Corporation on July 5, 1994, and that such resolution is now in full force and effect.

IN WITNESS WHEREOF, I have affixed my name as Secretary, this 2nd day of May 2006.

Mike Herald

Secretary

ATTACHMENT 15:

The cumulative economic impact of the proposed project will be to contribute to the overall present economy in Perry County. Not only will the proposed project directly contribute to the mining industry, but will contribute to other sectors closely related to the mining industry. These sectors will include trucking companies, mine supply companies, equipment sales companies, fuel sales companies, engineering firms, and other sectors that depend upon the mining industry as a part of their accounts receivable base. The region heavily relies on the coal industry as a part of its viable economy, as the coal industry accounts for 14% of all employment within Perry County and accounts for 21.4% of total county wages (KY Coal Facts, FY 2004). As old mining operations close, new operations must be opened in order for the local economy to sustain its current level.

The proposed mining operation will aid in maintaining the current level, or increase the current level, of employment within the mining sector while creating additional monies received from coal severance taxes collected during the life span of the mining operation. The proposed operation would generate approximately $1,334,616 (based on a minimum of $0.50/ton with approximately 2,669,232 tons of recoverable reserve) in severance tax during the life span of the operation. Although a majority of the tax revenue is directed to the state, a large portion will directly benefit Perry County, approximately 50% of coal severance tax paid was returned to the county during fiscal year 2005.

ATTACHMENT 16:

The welfare of persons within the Appalachian region of Kentucky has historically been dependent upon the success of the coal mining industry, especially during periods of economic uncertainty or instability. Particularly within eastern Kentucky, the importance of the coal industry looms large in most facets of the lives of the region's citizens. Given the dependence upon the coal industry, small changes in demand for coal production can often bring about drastic changes in the local economy.

The heavy dependence on the coal industry in Kentucky coal producing counties often leaves these counties susceptible to changes in the fortunes of the industry. As a result, losses in coal mining earnings in these counties often lead to increased poverty and dependence on social welfare programs.

The proposed mining plan (coal removal by surface mining methods) represents the most efficient method for the removal of the present unmined coal reserves. The more efficient the mining method, will equal more coal production which in-turn will generate more revenues that will aid in the overall economy of the county.

Kentucky Pollutant Discharge Elimination System (KPDES)
Instructions
KPDES Permit Application Supplemental Information

SECTION I – PERMITTEE INFORMATION

Facility Name:	Provide the name of the facility
Mailing Address, City, State, and Zip Code:	Provide the mailing address
KPDES No.:	Provide the KPDES permit number for the facility
County:	Indicate the county in which the facility is located
Receiving Water Name:	Indicate the water body into which the facility discharges or plans to discharge.

SECTION II – Alternatives Analysis

For each item, provide a synopsis of the evaluations that were performed. A successful demonstration will provide justifications as to why these alternatives were not consider viable.

Include appropriate supporting documentation.

SECTION III – Socioeconomic Demonstration

Answer yes or no as appropriate. Where indicated, provide a synopsis of the positive economic impacts that will result from this project. A successful demonstration will show why the lowering of water quality is necessary to accommodate important economic or social development in the area.

Include appropriate supporting documentation.

SECTION IV - CERTIFICATION

Name and Title:	Indicate the name and title of the person signing the form.
Telephone No.:	Provide the telephone number of the person signing the form.
Date:	Indicate the date that the form was signed.

This form is part of the permit application and must be signed as follows:

Corporation: by a principal executive officer of at least the level of vice president
Partnership or sole proprietorship: by a general partner or the proprietor respectively